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SOURCE Uspekhi Khimii, Vol XII, pp 245-255.STALIN LAUREATES IN CHEMISTRY FOR 1943

V. V. Lebedinskiy

In addition to awards for discoveries and inventions in 1941 - 1942, the Soviet government has decided to award a number of Stalin Prizes for outstanding services in science and engineering over a number of years. The following received awards in chemistry for 1943:

## 1. A. Ye. Arbuzov

The new Stalin Laureate, Academician Aleksandr Yermingel'dovich Arbuzov, Professor of the Chair of Organic Chemistry, Kazan State University, and of the Kazan Chemical and Technological Institute, has worked more than 40 years along the traditional lines of the Kazan School of Organic Chemistry. He is the author of over 100 papers in various branches of chemistry.

Arbuzov's best known research work includes the following subjects: organophosphorus compounds, their catalytically induced reactions and comparison of the catalytically activated reactions of phosphorous derivatives with those of carbon compounds; the tautomerism of organophosphorus compounds and, later, of nitrogen compounds; study of Boyd's acid chloride leading to discovery of a simple method of obtaining free radicals.

Among other activities of benefit to industry, Arbuzov took an active part in developing the naval stores industry (production of Turpentine and colophony), making the Soviet Union the second largest producer in the world; he invented a method of obtaining furfural from straw by using phosphoric acid as a catalyst and a commercial method of obtaining acetic anhydride. In the First Imperialist War, he organized production of phenol from petroleum benzene, and of sodium salicylate, aspirin, salol, nigrosine, and other compounds. He is now engaged on defense work for his country. He has collected around him a circle of students who have become doctors of chemical sciences, professors of colleges and higher technical schools, Candidates of Chemistry, and independent research workers who will carry on his traditions.

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## 2. Aleksandr Aleksandrovich Baykov

Academician Aleksandr Aleksandrovich Baykov, Professor of Leningrad Industrial Institute, has achieved many successes during the past 10 years in theoretical and practical chemistry, metallurgy and metallography.

His most important work concerns: the theory of cement hardening; study of the properties of copper and antimony alloys; copper matte, black copper, and, in particular, the theory of pyrites smelting. He recommended "DS" steel for construction work in the Palace of the Soviets at Moscow. He retains an active interest in the present-day needs and problems of industry along the lines of his specialty.

In his 40 years of teaching, Baykov has trained thousands of students, many of whom now occupy high posts as chemists or engineers.

Baykov is the First Vice-President of the Academy of Sciences USSR, and is especially busy in evacuating the institutions of the Academy to the Urals and other eastern sections of the country.

He is a member of the Supreme Soviet USSR and was recently appointed Chairman of the Council of the Scientific and Technical Board of Experts, State Planning Commission USSR, by the Council of People's Commissars. He also received the Order of Lenin in 1943.

## 3. Yakov Borisovich Zel'dovich

Yakov Borisovich Zel'dovich, Laboratory Director, Institute of Chemical Physics, Academy of Sciences USSR, received a 1943 Stalin Prize for outstanding studies on the theory of combustion and detonation of gases, published in 1941 and 1942.

A brilliant theorist and outstanding experimenter, Zel'dovich especially known for his studies on flame propagation, ignition, detonation, combustion of gunpowder, etc., and for combining ideas on the velocities of ordinary chemical reactions, the theory of flame propagation, and data on the shock wave of explosions into a complete system of chemical kinetics. He is now working on problems connected with the war.

In his 30 years of activity, Zel'dovich has published over 50 scientific papers. He was a student of Academician N. N. Semenov, Institute of Chemical Physics.

## 4. Valentin Alekseyevich Kargin

Valentin Alekseyevich Kargin, Laboratory Director, Physicochemical Institute imeni Karpov, was awarded a 1943 Stalin Prize jointly with Mariya Nikolayevna Shteding, Senior Scientific Assistant of the same Institute, for developing and introducing a new method of processing protective fabrics.

Kargin has used his theoretical research work in colloid chemistry to solve industrial and war problems on protective fabrics. Recently he has specialized in applied physics (X-ray, etc.) to establish the structure of high-molecular compounds.

Kargin studied under A. I. Rabinovich, Corresponding Member of the Academy of Sciences USSR.

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## 5. Aleksandr L'vovich Klebanskiy

Aleksandr L'vovich Klebanskiy, Scientific Director, Central Scientific Research Laboratory, Experimental Plant of the People's Commissariat of the Rubber Industry, received the Stalin Prize for developing a new method of obtaining synthetic rubber and introducing it into production. His main achievement was solving the problem of producing chloroprene rubber both under laboratory conditions and under industrial conditions within the scope of the growing synthetic rubber industry.

## 6. Isaak Ruvimovich Krichevskiy

Isaak Ruvimovich Krichevskiy, Doctor of Chemical Science, head of one of the laboratories of the State Scientific Research Institute for Nitrogen, with his co-workers in the same institute, Petr Yeliseyevich Bol'shakov and Daniil Semenovitch Tsiklis, received the Stalin Prize for "Heterogeneous Equilibria in the Ammonia-Nitrogen System under High Pressures," published in 1941, and "Limited Mutual Solubility of Gases under High Pressures," in 1942.

Krichevskiy studied gases under high and ultra-high pressures, determined the behavior of gases under various conditions, establishing that under pressures of several thousand atmosphere separation into layers occurs in gas mixtures which are completely miscible under ordinary pressures. His work and that of his co-workers made it possible to explain the processes taking place under industrial conditions and provided an easier method of separating gas mixtures and obtaining them in a pure form.

## 7. Sergey Semenovitch Nametkin

Academician Sergey Semenovitch Nametkin, Director of the Institute of Fuel Deposits, Academy of Sciences USSR, received the 1943 Stalin Prize for many years of outstanding work in chemistry.

Over 200 of Nametkin's scientific works are published in Russian and foreign scientific journals. His Chemistry of Petroleum is one of the best textbooks in this field.

As a result of his work on hydrocarbons (chiefly cyclic and pentane hydrocarbons), he obtained many new compounds, such as isocamphane, isocamphane acid, etc. Studies of camphor group homologues resulted in discovery of the new "Nametkin" camphene grouping. Besides working in stereochemistry, he did brilliant work in desulfurizing sulfurous gasolines and introduced cracking installations in the Soviet Union.

## 8. Aleksandr Nikolayevich Nesmeyanov

Aleksandr Nikolayevich Nesmeyanov, Corresponding Member of the Academy of Sciences USSR, Director of the Institute of Organic Chemistry, Academy of Sciences USSR, Professor of Moscow Institute of Fine Chemical Technology, received the Stalin Prize this year for his published works on metallo-organic compounds.

Nesmeyanov published a series of articles and a monograph in 1941 and 1942 on metallo-organic compounds. His diazo method of obtaining metallo-organic compounds simplified the synthesis of many organic compounds of metals such as zinc, aluminum, cadmium, tin, mercury, lead, etc. Among the compounds of this group in practical use are: Ehrlich's salvarsan, tetraethyl lead, lewisite, adamsite, etc. He has also achieved good practical and theoretical results from his work on synthetic rubber, medicinal substances, adhesives, etc.

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9. Grigoriy Semenovich Petrov

Grigoriy Semenovich Petrov, Professor of Moscow Order of Lenin Chemical Technological Institute imeni Mendeleyev, and the group headed by him received the 1943 Stalin Prize for developing new and improved methods of production in the field of chemical technology.

Petrov worked out practical methods for obtaining and applying new forms of plastics which have been of especial value to the cable industry.

10. Aleksandr Yevgen'yevich Poray-Koshits

Academician Aleksandr Yevgen'yevich Poray-Koshits, Professor of the Leningrad Chemicotechnological Institute, was made one of the Stalin Laureates of 1943 for his many years of service in chemistry and engineering.

Poray-Koshits has written over 200 scientific works, ten books, a textbook on aniline dyes, and has taken out about 20 patents on inventions for the aniline-dye industry.

In 1903, because of his active part in student riots, he had to leave Russia. He studied at Netzki's school of chemical dyeing at Basel, which influenced his subsequent work. His chief work concerns problems on the theory of chromophore groups, and organic compounds having dye-stuff properties. He has also worked on the theory of dyeing plant and animal fibers. He developed a spectrophotometric method for direct determination of dyes in fibers.

Poray-Koshits is head of a school of chemists in the aniline-dye industry.

11. Yakov Kivovich Syrkin

Yakov Kivovich Syrkin, Professor and Chief of the Laboratories on the Structure of Matter, Physicochemical Institute imeni Karpov, Professor and Chief of the Chair of Physical Chemistry, Moscow Institute of Fine Chemical Technology imeni Lomonosov, received the 1943 Stalin Prize for his works, published in 1941 - 1942, on various subjects (borane, naphthalene molecules, dielectric constants, etc.).

Syrkin's studies include the mechanism of chemical reactions, the formation and decomposition of tetra-substituted ammonium salts (Menshutkin's reactions) etc; the structure of chemical compounds and nature of chemical bonds; measurements of the dipole moments of many substances. He established the influence of a solvent on polar molecules, and the polarity of certain hydrocarbons (fluorene, cyclopentadiene, etc.). He made use of Raman spectroscopy and quantum-mechanical computations in studying the molecular structure of many compounds (naphthalene, borane, etc.).

12. Vitaliy Grigor'yevich Khlopov

Academician Vitaliy Grigor'yevich Khlopov, Honored Worker in Science, received the 1943 Stalin Prize for his outstanding services to the national economy.

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Khlopin's early studies, including complex compounds of the platinum group, resulted in practical commercial methods of obtaining pure platinum and analysis. Later he studied radioactive substances. During the war, he organized industrial plants for the production of radium from ferghanite ores. In 1921, the factory he directed obtained the first radium preparations for domestic industries. The USSR is now one of the greatest producers of radium in the world. In 1922 Khlopin and Vernadskiy organized the Radium Institute of the Academy of Sciences USSR. Khlopin was its scientific chief and was appointed director in 1935. Khlopin, his colleagues, and students in the institute have done much detailed work on fractional crystallization.

Khlopin also organized the production of permanent luminophores, which is extremely important from the military standpoint. His advice and direct participation in the production of medical radium preparations have been of great assistance to public-health work.

To aid the work of Khlopin, and his students and colleagues on radioactive products of the fission of uranium nuclei under the action of neutrons, first cyclotron in Europe, and the only one in the USSR, was built at the Radium Institute. It yields particles with an energy of 7 MeV.

With the aid of Professors B. A. Nikitin and A. Ye. Polesitskiy, Khlopin developed a new method of extracting large quantities of radiothorium, thus rendering an invaluable service to the defense industry. It was this work which gained him the Stalin Prize.

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